

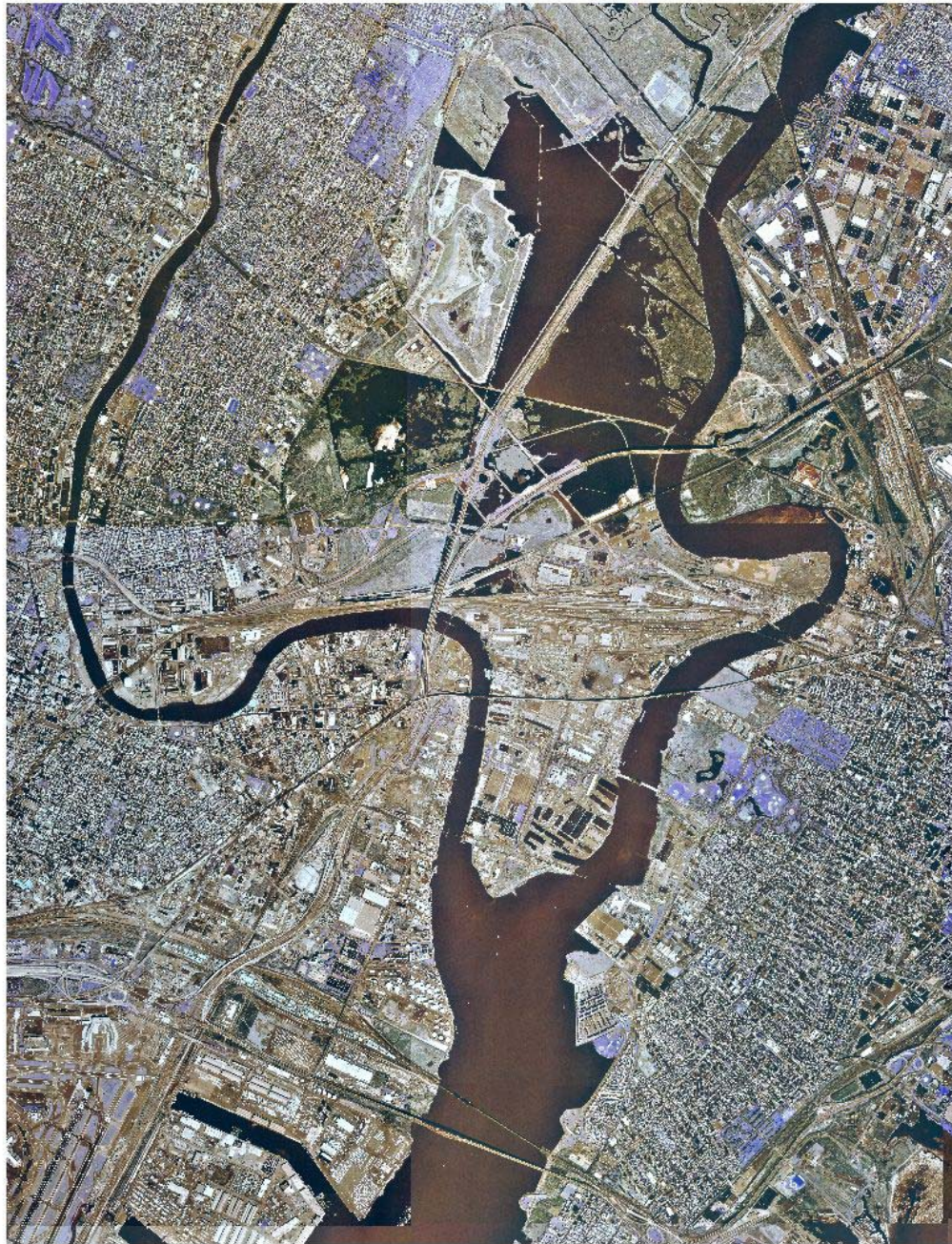
Habitat Characterization

Objectives

- Identify key habitats that remain in the PRSA
- Characterize/quantify shoreline habitats in the PRSA
- Delineate intertidal mudflats

Methods

- Visual/videotape survey of shorelines throughout PRSA in Fall 1999 and Spring 2000
- Low and high tide surveys
- Classify/quantify shorelines into four categories — aquatic vegetation, bulkhead, riprap, mixed vegetation



Lower Passaic River Landscape

Shoreline Habitat Classification Categories

Category	Description
Aquatic vegetation	Represents shoreline habitats composed of emergent wetland plant species such as <i>Spartina alterniflora</i> or <i>Phragmites</i> . Areas of aquatic vegetation often occur as narrow bands of vegetation near the top of the intertidal zone, typically with intertidal mudflat below.
Bulkhead	Consists of horizontal or vertical wood timbers, metal sheet pile, or large stone blocks constructed to form a vertical face perpendicular to the water surface
Riprap	Includes cobble to boulder-sized stone and/or concrete rubble placed along the shoreline on a sloped bank
Mixed vegetation	Represents areas with aquatic vegetation interspersed (laterally and/or longitudinally) with riprap and/or bulkhead. Areas of riprap shoreline with significant over-hanging riparian vegetation were also included as mixed vegetation to acknowledge the minor contribution to aquatic habitat provided by the adjacent riparian vegetation.

Typical Bulkhead



Bulkhead, Riprap, Outfalls



Mixed Vegetation/Mudflat



Shoreline Habitat Characterization for the PRSA — Point-No-Point Reach

Shoreline Habitat Type	Right Bank ^a		Left Bank ^b	
	Linear Feet	Percent of Total	Linear Feet	Percent of Total
Bulkhead	1,219	16%	4,994	63%
Riprap	4,128	54%	2,873	37%
Mixed vegetation ^c	883	12%	0	0%
Aquatic vegetation	1,407	18%	0	0%
Total shoreline (feet)	7,637		7,867	

Notes:

^a Right bank facing downstream (e.g., western/southern shoreline).

^b Left bank facing downstream (e.g., eastern/northern shoreline).

^c Mixed vegetation refers to areas of aquatic/upland vegetation interspersed with riprap or bulkhead and areas of riprap shoreline with significant overhanging riparian vegetation.

Shoreline Habitat Characterization for the PRSA – Harrison Reach

Shoreline Habitat Type	Right Bank ^a		Left Bank ^b	
	Linear Feet	Percent of Total	Linear Feet	Percent of Total
Bulkhead	4,524	39%	3,131	25%
Riprap	4,508	38%	4,037	32%
Mixed vegetation ^c	2,171	19%	3,409	27%
Aquatic vegetation	519	4%	1,917	15%
Total shoreline (feet)	11,722		12,494	

Notes:

^a Right bank facing downstream (e.g., western/southern shoreline).

^b Left bank facing downstream (e.g., eastern/northern shoreline).

^c Mixed vegetation refers to areas of aquatic/upland vegetation interspersed with riprap or bulkhead and areas of riprap shoreline with significant overhanging riparian vegetation.

Shoreline Habitat Characterization for the PRSA – Newark Reach

Shoreline Habitat Type	Right Bank ^a		Left Bank ^b	
	Linear Feet	Percent of Total	Linear Feet	Percent of Total
Bulkhead	6,860	81%	5,973	77%
Riprap	1,562	19%	1,796	23%
Mixed vegetation ^c	0	0%	0	0%
Aquatic vegetation	0	0%	0	0%
Total shoreline (feet)	8,422		7,769	

Notes:

^a Right bank facing downstream (e.g., western/southern shoreline).

^b Left bank facing downstream (e.g., eastern/northern shoreline).

^c Mixed vegetation refers to areas of aquatic/upland vegetation interspersed with riprap or bulkhead and areas of riprap shoreline with significant overhanging riparian vegetation.

Shoreline Habitat Characterization for the PRSA – Kearny Reach

Shoreline Habitat Type	Right Bank ^a		Left Bank ^b	
	Linear Feet	Percent of Total	Linear Feet	Percent of Total
Bulkhead	4,802	90%	3,214	62%
Riprap	526	10%	800	15%
Mixed vegetation ^c	0	0%	1,189	23%
Aquatic vegetation	0	0%	0	0%
Total shoreline (feet)	5,328		5,203	

Notes:

^a Right bank facing downstream (e.g., western/southern shoreline).

^b Left bank facing downstream (e.g., eastern/northern shoreline).

^c Mixed vegetation refers to areas of aquatic/upland vegetation interspersed with riprap or bulkhead and areas of riprap shoreline with significant overhanging riparian vegetation.

Shoreline Habitat Characterization for the PRSA – Arlington Reach

Shoreline Habitat Type	Right Bank ^a		Left Bank ^b	
	Linear Feet	Percent of Total	Linear Feet	Percent of Total
Bulkhead	573	89%	0	0%
Riprap	70	11%	30	4%
Mixed vegetation ^c	0	0%	655	96%
Aquatic vegetation	0	0%	0	0%
Total shoreline (feet)	643		685	

Notes:

^a Right bank facing downstream (e.g., western/southern shoreline).

^b Left bank facing downstream (e.g., eastern/northern shoreline).

^c Mixed vegetation refers to areas of aquatic/upland vegetation interspersed with riprap or bulkhead and areas of riprap shoreline with significant overhanging riparian vegetation.

Shoreline Habitat Characterization for the PRSA – Cumulative Total

Shoreline Habitat Type	Right Bank ^a		Left Bank ^b		Total Shoreline	
	Linear Feet	Percent of Total	Linear Feet	Percent of Total	Linear Feet	Percent of Total
Bulkhead	17,978	53%	17,312	51%	35,290	52%
Riprap	10,794	32%	9,536	28%	20,330	30%
Mixed vegetation ^c	3,054	9%	5,253	15%	8,307	12%
Aquatic vegetation	1,926	6%	1,917	6%	3,843	6%
Total shoreline (feet)	33,752		34,018		67,770	

Notes:

^a Right bank facing downstream (e.g., western/southern shoreline).

^b Left bank facing downstream (e.g., eastern/northern shoreline).

^c Mixed vegetation refers to areas of aquatic/upland vegetation interspersed with riprap or bulkhead and areas of riprap shoreline with significant overhanging riparian vegetation.

Key Habitats in PRSA

- Intertidal mudflats (although very degraded)
- Frank's Creek confluence area
 - Limited *Spartina alterniflora* stand
- Lawyer's Creek confluence area
 - Mixed *Phragmites australis* and *Spartina* stand

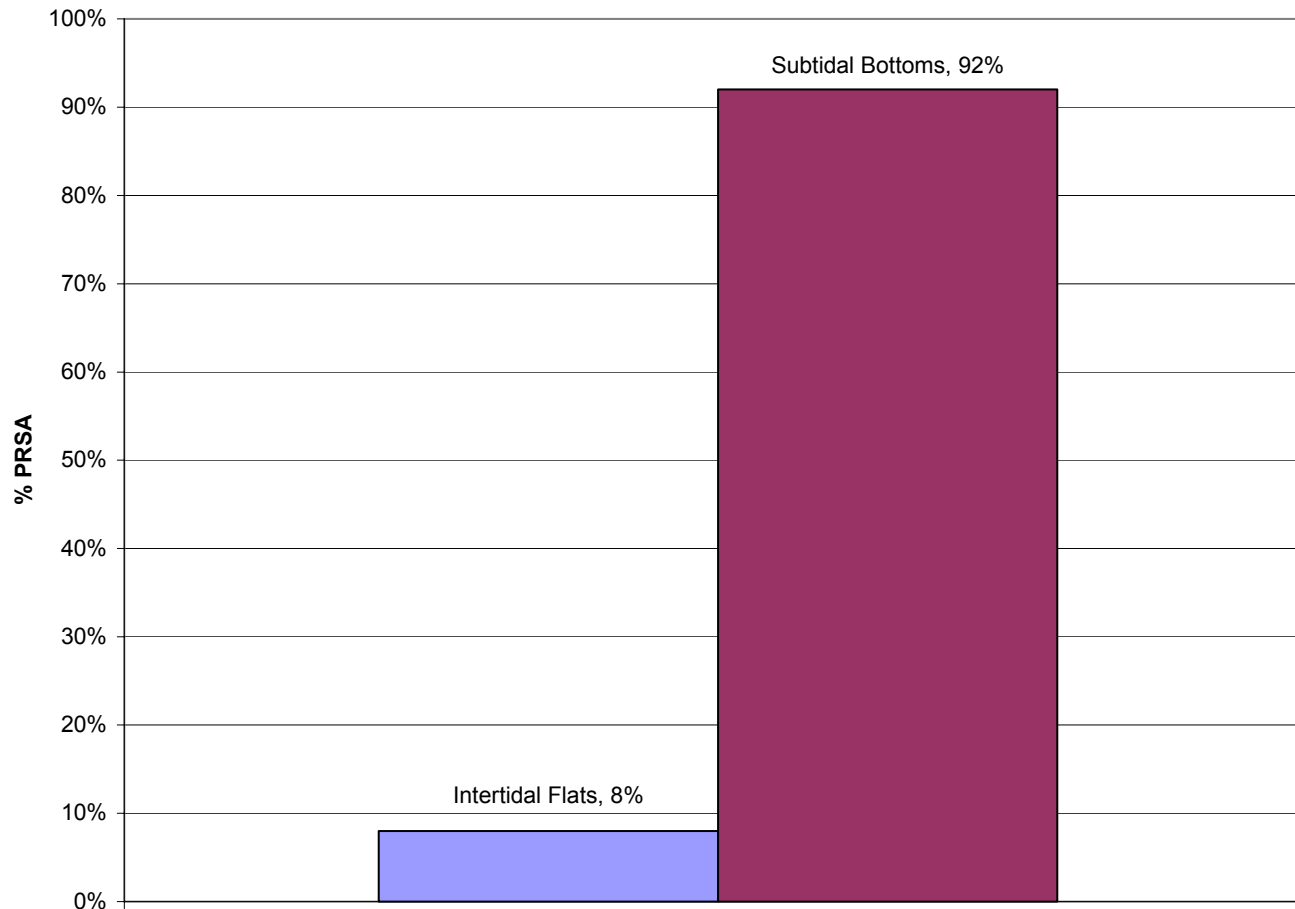
Typical Mudflat Area



Typical Mudflat Area



River Bottom Habitat



Estimates of Historical Wetland Losses in the Newark Bay Estuary

Year	Acres	Cumulative Percent Loss
Pre-1816 ^a	24,466	--
1870	18,166	26
1905	15,790	36
1932	11,968	51
1940	11,180	54
1954	8,738	64
1966	5,574	77
1976	3,570	85
1989	3,058	88
1997	2,921	88

^a Based on sum of mapped wetlands in 1870 and reported wetlands losses for period of 1816 through 1867.

Estimated Losses of Historical Rivers, Creeks, and Tributaries in the Lower Passaic River and Newark Bay

River/Creek	Estimated Length Lost (mi)
Bound Creek and Tributaries	18.1
Maple Island Creek and Tributaries	13.2
First River and Tributaries	6.0
Unnamed Passaic Tributary Creeks	0.7
Kearny Marsh Tributaries	1.2
Great Meadow Brook and Tributaries	6.3
Oyster Creek and Tributaries	2.3
Upper Newark Bay Tributaries	10.9
Other Newark Bay Tributaries	20.2
Total Lost	76.6

Lawyer's Creek Confluence with PRSA



Frank's Creek Confluence with PRSA



Conclusions

- Wetlands limited primarily to degraded intertidal mudflats and fringe vegetation
- Majority of shoreline (>80%) consists of bulkhead and riprap = very little habitat value
- Less than 10% of the shoreline area contains aquatic/wetlands vegetation